

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	6	polymer and (extrude or extruded or extruding) and (uv or ultraviolet) near2 absorber and optical near2 brightner and polyester	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/06/09 10:36
L2	3	polymer and (extrude or extruded or extruding) and (uv or ultraviolet) near2 absorber and optical near2 brightner and polyester and wavelength	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/06/09 10:37
L3	0	polymer and (extrude or extruded or extruding) and (uv or ultraviolet) near2 absorber and optical near2 brightner and polyester and wavelength and (benzophenone or benxotriazole or triazine or benzoxazole)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/06/09 10:37

DATE: Thursday, June 09, 2005 [Printable Copy](#) [Create Case](#)

<u>Set</u>	<u>Name</u>	<u>Query</u>	<u>Hit</u>	<u>Set</u>
			<u>Count</u>	<u>Name</u>
				result set
<i>DB=USPT,USOC; THES=ASSIGNEE; PLUR=YES; OP=ADJ</i>				
<u>L8</u>	side by side	L7 and optical brightener	89	<u>L8</u>
<u>L7</u>		(polyester or polyethylene terephthalate) same (ultraviolet absorber or ultraviolet stabilizer or UV absorber)	1103	<u>L7</u>
<u>L6</u>		(polyester or polyethylene terephthalate) same (ultraviolet absorber)	1	<u>L6</u>
<u>L5</u>		(polyester or polyethylene terephthalate) same (ultraviolet absorber) same (brightener)	0	<u>L5</u>
<u>L4</u>		(polyester or polyethylene terephthalate) same (ultraviolet absorber) same (optical brightener)	0	<u>L4</u>
<u>L3</u>		(polyester or polyethylene terephthalate) near (ultraviolet absorber) near (optical brightener)	0	<u>L3</u>
<u>L2</u>		(polyester or polyethylene terephthalate)near(ultraviolet absorber) near optical brightener	0	<u>L2</u>
<u>L1</u>		(polyester or polyethylene terephthalate)(P)(ultraviolet absorber) (P) optical brightener	0	<u>L1</u>

END OF SEARCH HISTORY

6,596795

Further developments for the ultraviolet protection of certain polymeric media (such as polyesters) have included methine-based compounds which, to be effective in terms of low extraction from such a thermoplastic, must be introduced during the actual polymerization reaction of the base thermoplastic polymer itself. For example, U.S. Pat. No. 4,617,374 to Pruett et al. teaches such UV absorbers for polyester end-uses. Again, however, such compounds exhibit very high extraction results unless they are added as to-be-polymerized reactants themselves with the ester monomers during the polymerization step. In such an instance, these UV absorbers are actually integrated within the polymer, and not just mixed within the thermoplastic medium. As such, although such compounds do exhibit excellent results when polymerized within the target polyester, unfortunately such compounds are limited in their versatility since the only time during which effective introduction is permitted is during the aforementioned polymerization procedure. There thus still remains a need to provide a more versatile UV absorber for thermoplastic end-uses such that the producer can introduce the UV absorber at any time during the production of the target thermoplastic such that the additive does not exhibit such high extraction and yet still provides excellent UV absorbing properties thereto.

Brief Summary Text (9):

Although some interest has been demonstrated within the area of certain methine-based UV absorber compounds (i.e., L'Oreal's malonate derivatives), to date there has been no disclosure or fair suggestion regarding the utilization of the polyoxyalkylenated derivatives of such UV absorbers in that capacity within certain media (such as, for example, plastics), or on other surfaces (skin, textiles, for example), or in other applications (inks, and the like, for example). In particular, no disclosures exist concerning low-color, low-extraction (migration) polyoxyalkylenated UV absorber compounds that provide effective protection from UV exposure between the wavelengths of from about 320 to about 400 nm. There is thus a great need within the UV absorber market, and most particularly within the transparent plastic film and container markets (for storing and protecting food, pills, and the like) for such types of improvements associated with relatively inexpensive materials and processes provided by the inventive polyoxyalkylenated methine-based UV absorber compounds. Other ultraviolet absorbing compounds and compositions have been developed or modified for certain plastic (thermoplastic, thermoset, etc.) applications, such as a class of compounds known by the name of Tinuvin.RTM., available from Ciba, and noted above. Although such compounds appear to provide very good ultraviolet protection both to the plastic itself and to any stored liquids, solids, etc., within a container made therewith such plastics, unfortunately such a class of compounds exhibits undesirable or problematic deficiencies. In particular, the breadth of protection within the UV spectrum is generally limited to from about 320 to about 375 nm with such compounds. Thus, they generally do not provide adequate UV protection to contents of plastic packaging over the entire range of UV wavelengths. Also, such Ciba compounds are generally naturally solid in nature and thus are either dispensed within target resins as solid powders or must be dispersed within liquids by the end-user at time very close to dispensing in order to be effective. If any such Ciba UV absorbers are in fact liquid, they still are limited in their breadth of UV protection in terms of wavelength ranges. Lastly, such Ciba compounds exhibit relatively high extraction levels and migratory characteristics from within target plastic resins, particularly thermoplastics such as polyethylene terephthalates. Thus, although such compounds are effective for UV protection to a certain extent, there are a number of drawbacks for which improvements are highly desired and necessary. To date, there thus remains a great need to provide an effective UV absorber that eliminates the above-noted deficiencies.

Brief Summary Text (24):

Such thermoplastic articles include bottles, storage containers, sheets, films, fibers, plaques, hoses, tubes, syringes, and the like. Included within this list would be Polyester, polystyrene and other like clear resinous materials in sheet form which are present within windows for strength and resiliency functions. In such an instance, the low-color UV absorbers of this invention would provide or contribute to excellent UV protection for contents with target packaging articles (such as bottles, containers, and

the like) or persons located indoors (such as within houses, buildings, cars, and the like, comprising windows with such additives included therein). Basically, the possible uses for such a low-color, low-migratory UV absorber is voluminous and cannot easily be enveloped. Other possible end-uses, however, would include solvent systems, printing inks, textile treatment compositions (either on or within textiles, fibers, fabrics, and the like).

Brief Summary Text (25):

Other types of articles contemplated within this invention for the particularly disclosed clear UV protected thermoplastics include, again without limitation, films, sheets, bottles, containers, vials, and the like. Ultraviolet absorbers are typically added to such compositions during the injection molding (or other type of molding, such as blow molding), thereof, including, and without limitation, by mixing the liquid absorber with resin pellets and melting the entire coated pellets, or through a masterbatch melting step while the resin and absorber are pre-mixed and incorporated together in pellet form. Such plastics include, again without limitation, polyolefins, polyesters, polyamides, polyurethanes, polycarbonates, and other well known resins, such as those disclosed within U.S. Pat. Nos. 4,640,690, to Baumgartner et al., and 4,507,407, to Kluger et al. under the term "thermoplastics". Generally, such plastics, including the UV absorber additive, are formed through any number of various extrusion, etc., techniques, such as those disclosed in the aforementioned U.S. patents. Preferred thermoplastics are polyesters, such as, in one non-limiting embodiment, polyethylene terephthalate. "Plastic packaging" thus encompasses containers, sheets, blister packages, and the like, utilized for storage purposes and which include the plastics in any combination as noted above.

Brief Summary Text (27):

Such inventive polymeric UV absorbers, as noted above, are very low in color [e.g., do not exhibit a b* value (indicating a degree of yellowing in this instance) above 2.5 on the CieLab scale]. Thus, there is no need to add appreciable amounts of other colorants (such as bluing agents, for example), acid scavengers, and other like additives, to the particular UV absorber to provide such desired low-color (low-yellowing) characteristics. It should be well understood by one of ordinary skill in this art that such a benefit as low-yellowing without any other additives present applies solely to the particular compounds and does not indicate that any compositions comprising such compounds solely include such inventive compounds as thermoplastic additives. In fact, other additives, such as the aforementioned bluing agents, acid scavengers, antistatic agents, optical brighteners, and the like, may also be added to these compounds prior to, during, and/or after introduction within the desired end product medium (such as thermoplastic, for example). The polymeric species may be determined through destructive analysis (methanolysis, for example), and further spectrophotometric analysis thereof to locate any signatures of an aniline poly(oxyalkylene) compound, as one example.

Brief Summary Text (33):

Additionally, such a highly reliable, easy-to-handle, low-color, and low-migratory (low-extraction) UV absorbing compound also provides a greater range of protection than the standard UV absorbers now provided within the industry. Generally, such standard UV absorbers are effective up to about 380 nm, even with an increase in amount of such a compound within the target medium (polyester, for example). Even with increased amounts of such standard UV absorbers present within the target media (such as thermoplastics), the discolorations within the target medium are more pronounced without a correlated benefit in a greater range of protected wavelengths. To the contrary, the inventive compounds provide protection up to about 400 nm. This effect is easily shown through the selection of a certain chemical compound prevalent within stored liquids and solids that is highly susceptible to UV attack and decomposition. For instance, as is shown in greater detail below, riboflavin (Vitamin B_{sub}2) meets such a description; in comparison with standard UV absorbers (Tinuvin.RTM. 234, for example), the protection accorded riboflavin within an aqueous solution and stored within a clear polyethylene terephthalate container and exposed to a UV source between 320 and 400 nm for 20 hours is

significantly higher for the inventive vanillin- and resorcinol-based compounds. Such an improvement, in combination with any or all of the other characteristics exhibited by these inventive compounds, thus shows the novelty and usefulness of such compounds, particularly within clear, and possibly plastic, applications.

Detailed Description Text (43):

The UV absorber was introduced within an injection molding operation for a Polyester thermoplastic, for instance Polyethylene terephthalate. The liquid absorber was blended via agitation onto hot, dried Polyethylene terephthalate resin (in pellet form) in a chamber, which minimized the adsorption of moisture, by the resin. The blend of absorber and pellets was gravity fed into the feed throat of the machine. In the feed section, melting was accomplished through the utilization of a heated (heat transferred from the barrel of the machine) screw extruder which rotated. The rotation of the screw provided thorough mixing of the absorber and molten resin together producing a uniform plastic melt which was injected into a mold in order to form the intermediate thermoplastic article, for instance a parison.

Detailed Description Text (55):

Although other UV absorbers with longer wavelength absorption have been disclosed, they usually impart color within the Polyester article. For many of the packaging application, a colorless and transparent package is essential. The inventive UV absorbers possess the exquisite balance of imparting exceptional UV screening ability and no color to the PET articles.

Detailed Description Text (63):

Polyester plaques containing the UV absorber additives were prepared using standard compounding methods. Each plaque had a surface area of 12.5 in.². The PET plaques were made using ClearTuf.RTM. 8006 PET (from M&G Polymers) resin while the PEN plaques were prepared using PEN Hypertuf.RTM. (from M&G Polymers).

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1Brief Summary Text (46):

The substrate and/or the primer composition preferably comprise one or more UV absorbers in order to improve the ageing characteristics of the film, and in particular to reduce the tendency of the film to become brittle over time. In principle, any organic or inorganic UV absorber, particularly one which is suitable for use with polyester, may be employed in the present invention. Suitable examples include the organic UV absorbers disclosed in Encyclopaedia of Chemical Technology, Kirk-Othmer, Third Edition, John Wiley & Sons, Volume 23, Pages 615 to 627. Particular examples of UV absorbers include benzophenones, benzotriazoles (U.S. Pat. Nos. 4,684,679, 4,812,498 and 4,681,905), benzoxazinones (U.S. Pat. Nos. 4,446,262, 5,251,064 and 5,264,539), triazines (U.S. Pat. Nos. 3,244,708, 3,843,371, 4,619,956, 5,288,778 and WO 94/05645) and hindered amines. The teaching of the aforementioned documents is incorporated herein by reference.

Brief Summary Text (51):

In one embodiment of the invention, a UV absorber may be chemically incorporated in the chain of a layer-forming polyester. Preferred UV-stable polyesters are produced by incorporating benzophenones into the polyester, for example as described in EP-A-0006686, EP-A-0031202, EP-A-0031203 and EP-A-0076582, the teaching of which is incorporated herein by reference.

Brief Summary Text (59):

One or more of the layers of the polymeric film according to the invention may conveniently contain any of the additives conventionally employed in the manufacture of polymeric films. Thus, agents such as dyes, pigments, voiding agents, lubricants, anti-oxidants, radical scavengers, thermal stabilisers, anti-blocking agents, surface active agents, slip aids, optical brighteners, gloss improvers, prodegradents, viscosity modifiers and dispersion stabilisers may be incorporated in the substrate and/or primer layer(s) as appropriate. In particular the substrate and/or primer layer, may comprise a particulate filler. The filler may, for example, be a particulate inorganic filler or an incompatible resin filler or a mixture of two or more such fillers.

Detailed Description Text (19):

A polymer composition comprising polyethylene terephthalate (84% by weight of the composition), ethylene terephthalate/ethylene isophthalate (82:18) copolyester (12% by weight of the composition) and a UV absorber (Tinuvin.TM. 1577FF; 4% by weight of the composition) was melt extruded, cast onto a cooled rotating drum and stretched in the direction of extrusion to approximately 3 times its original dimensions. The cooled stretched film was then coated on one side with Formulation A to give a wet coating thickness of 4 .mu.m. The coated film was passed into a stenter oven at a temperature of 120.degree. C. where the film was dried and stretched in the sideways direction to approximately 3 times its original dimensions. The biaxially stretched coated film was heat set at a temperature of about 230.degree. C. (Example 1) or of about 210.degree. C. (Example 2) by conventional means. The final film thickness was 50 .mu.m.

Detailed Description Text (25):

The procedure of Example 1 was followed using a polymer composition comprising polyethylene terephthalate (88% by weight of the composition), ethylene terephthalate/ethylene isophthalate (82:18) copolyester (8% by weight of the composition) and a UV absorber (Tinuvin.TM. 1577FF; 4% by weight of the composition).

L8: Entry 8 of 89

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File: USPT

Jun 29, 2004

DOCUMENT-IDENTIFIER: US 6756350 B1

TITLE: Transparent/translucent bottles

Brief Summary Text (5):

It has been known in the art that UV absorbers can be added to the bottle material during manufacture of clear bottles to protect them from becoming brittle and to protect the ingredients inside the bottle. For instance, in GB 2228940, the use of a dicarboxylate in polyester bottles to protect contents--mainly food--from radiation of 320-360 nm wavelength is described.

Detailed Description Text (100):

Optical brighteners for cotton, polyamide and polyester fabrics can be used. Suitable optical brighteners include Tinopal, stilbene, triazole and benzidine sulfone compositions, especially sulfonated substituted triazinyl stilbene, sulfonated naphthotriazole stilbene, benzidine sulfone, etc., most preferred are stilbene and triazole combinations. A preferred brightener is Stilbene Brightener N4 which is a dimorpholine dianilino stilbene sulfonate.

DOCUMENT-IDENTIFIER: US 6537670 B1

TITLE: Bis(alkyleneoxybenzophenone) ultraviolet light absorbers

Drawing Description Text (57):

C. Other Materials 1. Naturally occurring and synthetic organic materials: Naturally occurring and synthetic organic materials which may be mixtures of compounds, including mineral oils, animal and vegetable fats, oils and waxes, or oils, fats or waxes based on synthetic esters (e.g., phthalates, adipates, phosphates or trimellitates) and also mixtures of synthetic esters with mineral oils in any ratio. 1. Aqueous emulsions of natural or synthetic rubber: Aqueous emulsions of natural or synthetic rubber such as natural latex or latices of carboxylated styrene/butadiene copolymers. 3. Organic dyes: Organic dyes such as azo dyes (diazo, triazo and polyazo), anthraquinones, benzodifuranones, polycyclic aromatic carbonyl dyes, indigoid dyes, polymethines, styryl dyes, di- and triaryl carbonium dyes, phthalocyanines, quinophthalones, sulfur dyes, nitro and nitroso dyes, stilbene dyes, formazan dyes, quinacridones, carbazoles and perylene tetracarboxylic diimides. 4. Composites: The novel bisbenzophenone UV absorbers of the present invention can also be employed to stabilize composites, or fiber-reinforced engineering structural materials, in which the fibers are continuous or long enough that they can be oriented to produce enhanced strength in one direction. Examples of such composites are polyester resins reinforced by continuous glass fibers by filament winding and by pultrusion. Other suitable fibers for composites are graphite, made by pyrolyzing polyacrylonitrile, and aromatic polyamide (aramid) fibers. Epoxy resins are most commonly used as the matrix resin for composites. 5. IPN: The novel bisbenzophenone UV absorbers of the present invention can also be employed to stabilize interpenetrating polymer networks. These materials are formed, for example, by swelling a lightly cross-linked polymer with a second monomer, combining it with a cross-linking agent, and polymerizing the second monomer. Another type of interpenetrating polymer network is formed by polymerizing two monomer systems together by different mechanisms, for example by polymerizing styrene and divinyl benzene by a free radical mechanism with a polyurethane network forming by a step-reaction addition polymerization mechanism.

Drawing Description Text (67):

Stabilized laminated sheets are formed by postforming of stabilized thermosetting resin compositions, for example sheet molding compounds comprising unsaturated polyester resin, inorganic thickener, chopped glass fiber, curing catalyst, and the novel bisbenzophenone UV absorbers of the present invention.

Drawing Description Text (98):

The novel bisbenzophenone UV absorbers of the present invention are suitable for the photochemical stabilization of undyed, dyed or printed fiber materials comprising for example, silk, leather, wool, polypropylene, polyester, polyethylene, polyolefins, polyamide or polyurethanes and especially cellulose-containing fiber materials of all kinds. Examples of such fiber materials are the natural cellulose fibers, such as cotton, linen, jute and hemp and also viscose staple fiber and regenerated cellulose. The novel bisbenzophenone UV absorbers of the present invention are also suitable for the photochemical stabilization of hydroxyl-containing fibers in blend fabrics, for example blends of cotton with polyester fibers or polyamide fibers. A further preferred area of application relates to the blocking or reduction of the UV radiation which passes through the above-mentioned textile materials (UV cutting) and the heightened sun protection which textile materials finished with a novel compound offer to the human skin. An additional preferred area includes automotive applications such as seat belts, headliners, carpeting, and upholstery.

Drawing Description Text (188):

Other additives such as plasticizers, lubricants, emulsifiers, pigments, rheological additives, catalysts,

leveling assistants, optical brighteners, flameproofing agents, antistatic agents and blowing agents.

DOCUMENT-IDENTIFIER: US 6268415 B1

TITLE: Stabilized adhesive compositions containing highly soluble, photostable benzotriazole UV absorbers and laminated articles derived therefrom

Brief Summary Text (7):

Some polymers such as polycarbonates, polyesters and aromatic polyurethanes contain strongly absorbing chromophores as a major and integral part of their structures. Poly(ethylene terephthalate) (PET) and poly(ethylene 2,6-naphthalenedicarboxylate) (PEN) are particular examples the latter of which absorbs into the red UV region and especially need red-shifted benzotriazoles for UV protection. U.S. Pat. No. 5,294,473 and WO 98/34981 teach the use of coatings containing UV absorbers including some benzotriazoles in stabilizing PEN films. Adding an adhesive UV screening layer containing the benzotriazoles, especially those described in the instant invention, further protects such polymers in multilayered constructions and articles.

Brief Summary Text (126):

The instant adhesive stabilized by a benzotriazole in component (b) of the adhesive composition may also optionally contain from 0.01 to 10% by weight; preferably from 0.025 to 5% by weight, and most preferably from 0.1 to 3% by weight of additional coadditives such as antioxidants, other UV absorbers, hindered amines, phosphites or phosphonites, hydroxylamines, nitrones, benzofuran-2-ones, thiosynergists, polyamide stabilizers, metal stearates, nucleating agents, fillers, reinforcing agents, lubricants, emulsifiers, dyes, pigments, optical brighteners, flame retardants, antistatic agents, blowing agents and the like.

Brief Summary Text (207):

12. Other additives, for example, plasticizers, lubricants, emulsifiers, pigments, optical brighteners, flameproofing agents, anti-static agents, blowing agents and thiosynergists such as dilauryl thiodipropionate or distearyl thiodipropionate.

CLAIMS:

20. A composition according to claim 1 which additionally contains from 0.01 to 10% by weight based on the adhesive of a coadditive which is selected from the group consisting of the antioxidants, other UV absorbers, hindered amines, phosphites or phosphonites, hydroxylamines, nitrones, benzofuran-2-ones, thiosynergists, polyamide stabilizers, metal stearates, nucleating agents, fillers, reinforcing agents, lubricants, emulsifiers, dyes, pigments, optical brighteners, flame retardants, antistatic agents and blowing agents.

30. A composition according to claim 3 which additionally contains from 0.01 to 10% by weight based on the adhesive of a coadditive which is selected from the group consisting of the antioxidants, other UV absorbers, hindered amines, phosphites or phosphonites, hydroxylamines, nitrones, benzofuran-2-ones, thiosynergists, polyamide stabilizers, metal stearates, nucleating agents, fillers, reinforcing agents, lubricants, emulsifiers, dyes, pigments, optical brighteners, flame retardants, antistatic agents and blowing agents.

40. A composition according to claim 7 which additionally contains from 0.01 to 10% by weight based on the adhesive of a coadditive which is selected from the group consisting of the antioxidants, other UV absorbers, hindered amines, phosphites or phosphonites, hydroxylamines, nitrones, benzofuran-2-ones, thiosynergists, polyamide stabilizers, metal stearates, nucleating agents, fillers, reinforcing agents, lubricants, emulsifiers, dyes, pigments, optical brighteners, flame retardants, antistatic agents and blowing agents.